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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,282	03/26/2004	Richard L. Parton	87152AEK	8579

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EXAMINER	
YAMNITZKY, MARIE ROSE	
ART UNIT	**PAPER NUMBER**
1774	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/810,282	PARTON ET AL.	
	Examiner	Art Unit	
	Marie R. Yamnitzky	1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16,18-25 and 28-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16,18-25 and 28-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. This Office action is in response to applicant's amendment received February 08, 2007, which amends claims 1, 15 and 21, and cancels claims 17, 26 and 27.

This Office action is also in response to the Terminal Disclaimer received February 08, 2007.

Claims 1-6, 18-25 and 28-33 are pending.

2. The terminal disclaimer filed on February 08, 2007 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent No. 6,849,345 has been reviewed and is accepted. The terminal disclaimer has been recorded. Accordingly, the obviousness-type double patenting rejection set forth in the Office action mailed October 05, 2006 is overcome.

3. The rejections under 35 U.S.C. 102(b) and 35 U.S.C. 103(a) based on Enokida et al. (US 5,759,444) as set forth in the Office action mailed October 05, 2006 are overcome by applicant's amendment.

The rejection under 35 U.S.C. 102(a) and 102(e) based on Parton et al. (US 2003/0129449 A1) is overcome by applicant's amendment.

4. Claims 1-16, 18-25 and 28-33 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the

relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The application as originally filed provides insufficient support for the negative proviso for R^1 and R^2 as recited in present claims 1 and 21 that adjacent substituents may not join to form a ring.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-4, 6-11, 21, 22, 24, 25, 30, 32 and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsuura et al. (US 2005/0064233 A1).

See the whole publication. In particular, see paragraphs [0021]-[0046] and the formulae designated EM127, EM128, EM129, EM130 and EM192 on pages 26 and 37.

The compounds represented by formulae EM127, EM128, EM129, EM130 and EM192 are naphthalene compounds represented by Formula (1) as defined in claim 1 wherein each of p and w is 1, each of m and n is 0, and each of R^1 and R^2 is a sterically bulky substituent. These

compounds further meet the limitations of a compound represented by Formula (4) as defined in claim 21 wherein each of p and w is 1.

The compounds represented by formulae EM127, EM128, EM129, EM130 and EM192 further meet the limitations of one or more dependent claims which further define the sterically bulky substituent. For example, the compound of formula EM128 as shown on page 26 of the prior art is a compound of present formula (1) wherein each of p and w is 1, and each of R^1 and R^2 is a t-butyl group. Per page 5 of the present specification, a t-butyl group (t-C_4H_9) has a Sterimol B_1 value of 2.59 angstroms. Accordingly, prior art compounds such as the compound of formula EM128 meet the limitations of the naphthalene compound as defined in present claim 1 and further defined in present claims 2-4, 6-11, 21, 22, 24 and 25.

Regarding present claim 3, Ar^a is not present when each of m and n is 0.

Regarding the present claim requirement that the naphthalene compound be contained in a hole transport layer (a limitation of original claim 26), the prior art compounds referenced above are capable of transporting holes (e.g. see paragraph [0093]), and a layer comprising such compounds will inherently be capable of transporting holes.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-16, 18-25, 30, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura et al. (US 2005/0064233 A1) as applied to claims 1-4, 6-11, 21, 22, 24, 25, 30, 32 and 33 above, and for the further reasons set forth below.

With respect to claim embodiments requiring a sterically bulky substituent that is an aryl group with a substituent alpha to the point of attachment to the naphthalene compound, such as the substituent represented by present Formula (2b), Matsuura et al. teach that substituted aryl groups may be utilized as substituents. For example, see paragraphs [0023]-[0042]. 2-methylphenyl is explicitly taught in paragraph [0031]. 2-methylphenyl is a group of present formula (2b) in which "i" is 0 and S^2 is a methyl group. The substituted aryl group is not limited to those taught in paragraph [0031], and a phenyl group having multiple substituents is within the scope of the substituted aryl group.

With respect to claim embodiments in which one or both of m and n is 1 or 2, Matsuura et al. also teach that the compounds may have additional substituted or unsubstituted arylamino groups. For example, see paragraphs [0029], [0036] and [0040].

It would have been an obvious modification to one of ordinary skill in the art at the time of the invention to make compounds similar to those disclosed by Matsuura et al. and including other substituents disclosed and suggested in the prior art. For example, it would have been an obvious modification to one of ordinary skill in the art at the time of the invention to make compounds similar to EM128 having additional substituents such as substituted phenyl groups and/or diarylamino groups since Matsuura et al. teach that these groups may be used as substituents.

9. Claims 1-16, 18-25 and 28-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parton et al. (US 2003/0129449 A1).

(Applicant is requested to note that because the Parton et al. publication is available as prior art under 35 U.S.C. 103(a) via 102(a) as well as via 102(e), a statement of common ownership at the time of the present invention will not be sufficient to overcome the rejection under 35 U.S.C. 103(a).)

See the whole publication. In particular, see paragraphs [0009]-[0050], [0053], [0056], [0057], [0107] and [0146].

Of the compounds represented by the formulae in paragraph [0049], Inv-1 through Inv-9, Inv-13 through Inv-30, Inv-32 and Inv-33 are similar to compounds represented by Formula (1) as defined in present claim 1 and compounds represented by Formula (4) as defined in present claim 21 except that the prior art compounds do not meet the proviso that at least one of p and w is non-zero and/or do not meet the proviso that at least one of R^1 and R^2 be a sterically bulky substituent. (While present claim 21 defines p and w as "independently are 0-3", claim 21 depends from claim 1, which requires at least one of p and w to be non-zero.) Inv-6 and Inv-32 meet p=1 and w=1, but the methyl substituents at the positions corresponding to present R^1 and R^2 do not meet the limitations of a "sterically bulky substituent" as defined in the present specification. The other prior art compounds referenced above do not meet the "non-zero" proviso for at least one of p and w, and therefore do not have a sterically bulky substituent for at least one of R^1 and R^2.

Of the compounds represented by the formulae in paragraph [0049], Inv-16 through Inv-20, Inv-24 through Inv-30 and Inv-33 are similar to compounds required by present claim 3 when each of m and n is 1 or 2, and are similar to compounds represented by Formula (3) as defined in present claim 15, except that these compounds do not meet one or both of the provisos recited in claim 1 as noted above. (While present claim 15 defines p and w as "independently are 0-3", claim 15 depends from claim 1, which requires at least one of p and w to be non-zero.) Several other compounds depicted in paragraph [0049] are similar to compounds required by claim 3 when one of m and n is 0 and the other of m and n is 1, except that these compounds do not meet one or both of the provisos recited in claim 1 as noted above.

Parton et al. do not disclose a specific example of a naphthalene compound represented by present formulae (1), (3) or (4) wherein at least one of p and w is 1-3, and at least one of R^1 and R^2 is a sterically bulky substituent. However, such compounds are within the scope of Parton's disclosure. Substituents which are sterically bulky substituents are explicitly taught by Parton et al. See paragraph [0050]. An alkyl group such as "t-butyl", which has a Sterimol B_1 value of 2.59 and is a substituent represented by present Formula (2a), is taught in paragraph [0050]. An aryl group such as "2,4,6-trimethylphenyl", also known as "mesityl", which has a Sterimol B_1 value of 1.93 and is a substituent represented by present Formula (2b), is taught in paragraph [0050].

It would have been an obvious modification to one of ordinary skill in the art at the time of the invention to make compounds similar to those disclosed by Parton et al. and including other substituents disclosed and suggested in the prior art. For example, it would have been an

obvious modification to one of ordinary skill in the art at the time of the invention to make compounds similar to those disclosed in paragraph [0049] and having substituents such as t-butyl and/or 2,4,6-trimethylphenyl groups since Parton et al. teach that these groups may be used as substituents.

With respect to present claim 31, Parton et al. teach that the light-emitting layer may comprise a mixture of compounds and light emission can be of any color (see paragraph [0107]). It was well known in the art at the time of the invention that white light could be produced by selecting an appropriate combination of different light emitting materials to be combined in one layer, or an appropriate combination of different light emitting layers to be stacked upon one another.

10. Applicant's arguments filed February 08, 2007 have been fully considered but they are not persuasive.

With respect to the rejections based on the Matsuura reference, applicant argues that Matsuura uses the referenced compounds in the light emitting layer whereas the present claims are directed to a hole transport layer. Applicant argues that one skilled in the art would not be motivated to use Matsuura's compounds in a hole transport layer, arguing that Matsuura only shows the compounds to be emitting compounds in an emitting layer. These arguments are not persuasive because Matsuura's referenced compounds are capable of transporting holes, so a layer comprising such compounds will be capable of transporting holes.

Applicant's arguments regarding the amount of arylamine component (A) in Matsuura's device are not persuasive as the present claims place no limit on the amount of the amine compound in the layer. Further, these arguments are not persuasive because, while paragraph [0094] of the prior art teaches that the preferred amount of component (A) is 1-20 wt% based on the combined weight of components (A) and (B), the prior art does not limit the amount of component (A) to this range. As taught in paragraph [0093], the amount of component (A) can be in the range of 1-99 wt% based on the combined weight of components (A) and (B).

Applicant also argues that some of Matsuura's compounds do not contain the presently required sterically bulky group, and some contain a ring fused to the naphthalene ring which is not permitted by the present claims. These arguments are not persuasive. Although some of Matsuura's compounds do not meet the limitations of present formula (1), the compounds referenced in the rejection under 35 U.S.C. 102(e) do. Also note that paragraph [0097] of the prior art teaches advantages obtained by increasing the steric hindrance of arylamine component (A).

With respect to the rejection under 35 U.S.C. 103(a) based on the Parton reference, applicant argues that paragraph [0050] of the prior art contains a laundry list of substituents, and there is no motivation in the prior art to pick a sterically bulky substituent for the position required by the present claims. Applicant points to the comparative data in Table 1 on page 45 of the present specification in which Inv-1, a compound of present formula (1) in which each of p and w is 1 and both substituents are sterically bulky substituents, is compared to Com-1, a similar compound but lacking the sterically bulky substituents. The examiner agrees that each of

the three pairs of devices (i.e. Sample 1 vs. Sample 2, 4 vs. 5, and 6 vs. 7) shows that a device utilizing a compound of present formula (1) has better initial and final luminance compared to a device utilizing a similar compound outside the scope of formula (1). However, it is the examiner's position that the data do not demonstrate unexpected superior results commensurate in scope with the rejected claims. Many of the rejected claims only require one sterically bulky substituent whereas Inv-1 has two sterically bulky substituents, and each of the sterically bulky substituents of Inv-1 has a Sterimol B_1 parameter of 2.59 whereas the broadest claims only require a substituent have a Sterimol B_1 parameter of 1.6 or greater (based on the definition of "sterically bulky" substituent as set forth in the paragraph bridging pages 4 and 5 of the specification). Further, the data demonstrate that the amount of improvement is affected by the overall device structure. For example, Sample 6 vs. 7 has only a 6% improvement in initial luminance and only 2% improvement in final luminance whereas Sample 4 vs. 5 (which utilize the same materials as 6 and 7, but different layer thicknesses) has a 28% improvement in initial luminance and 19% improvement in final luminance.

11. Miscellaneous:

Since at least one of p and w must be non-zero per claim 1, the examiner suggests that "d, e, f, g, p and w independently are 0-3" as recited in the penultimate line of claim 15 be changed to --d, e, f and g independently are 0-3--.

Likewise, the examiner suggests deleting "p and w independently are 0-3;" from the penultimate line of claim 21.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 7:00 a.m. to 3:30 p.m. Monday-Friday.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY
April 23, 2007

Marie R. Yamnitzky

MARIE YAMNITZKY
PRIMARY EXAMINER

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